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Inspection: Facility: U.S. Department of Energy Hanford

ID No.: WA 789000 8967

Date of Inspection: May 11, 1998 to
July 30, 1998

Date of Report: May 25, 1998 to
August 10, 1998

Facility Address: USDOE Hanford
Richland, Washington 99352

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Purpose:

This inspection was conducted as part of a multi-media inspection to determine the facility's compliance with United States and State of Washington Hazardous Waste laws.

Facility Description:

The United States Department of Energy (USDOE) Hanford facility is located on a 570 square mile tract of land north of Richland, Washington. It is comprised of several concentrated areas of activity scattered across the site with large open areas between them. Hanford was operated as a nuclear weapons production facility beginning in the 1940's. Weapons production has ceased and current activities consist mainly of environmental cleanup of widespread contamination. As part of this activity a wide range of waste streams are generated.

Waste Management Hanford (WMH) has a contract with USDOE to manage waste generated by all the contractors onsite except for Battelle's Pacific Northwest National Laboratories (PNNL). They are divided into three groups. WMH Generator Services works with all of the generators on site to characterize and manage their waste and arrange for shipment of waste from the generator to the Treatment Storage or Disposal facility (TSD) either onsite or offsite. WMH Technical Services verifies the waste characterization and determines which facility the waste should go to. WMH Operations Services operates the onsite TSDs.

Pacific Northwest National Laboratories (PNNL) manages its own waste and pays WMH for waste sent to the Central Waste Complex (CWC). PNNL generators have either a field services representative (FSR) from the PNNL Field Services division or a hazardous materials coordinator (HMC) from a lab group. The FSR or HMC is responsible for working with the generator to make sure that waste is properly designated and properly managed. PNNL operates a permitted storage unit for hazardous waste in the 305B building and a permitted storage unit for mixed waste in the 325 building. When a generator has waste to dispose of they will submit a Chemical Disposal Recycle Request (CDRR) form to the TSD staff. The CDRR should contain all the information needed to properly designate the waste. The Hazardous Waste Operations group designates hazardous waste and the Mixed Waste group designates mixed waste. Once the

designation is made a second person will verify the designation. Shipping is arranged and the waste is transported to the TSD by a registered hazardous waste transporter. Upon receipt at the TSD a waste verification is done. Mixed wastes go to the permitted treatment unit in the 325 building. It is treated to meet the acceptance criteria for WMH and then is shipped to CWC or the burial grounds. Liquid mixed waste goes into the Liquid Radioactive Waste System (LRWS) and is piped to the tanks in the facility at the 340 building. From the 340 building it goes to the 200 area tank farms by railcar. Hazardous waste goes to the permitted storage unit at the 305B building and is lab packed or otherwise processed for offsite shipment. Onsite waste transportation is the responsibility of Dyncorp, a USDOE contractor.

Notification and Permits:

The facility has a final RCRA permit. The permit covers several TSD units. Several other units continue to operate under interim status. The final permit is revised annually to convert units from interim status to final status as permit conditions are approved.

Inspection:

At 1:00 pm on May 11, 1998 a multi-media inspection team from EPA Region 10 met with representatives from the U.S. Department of Energy to begin a multi-media inspection of the Hanford facility in Richland, Washington. The afternoon was spent organizing teams of inspectors from EPA, Ecology, and Washington State Department of Health for each media to be inspected. The RCRA team consisted of Jack Boller and Doug Smith (the multi-media team leader) of EPA and Steve Moore and Clint Stuart of Ecology. Gloria Williams and Tony McKarns represented the USDOE.

At 8:00 am on May 12 the team met at the EPA Richland office to begin the field portion of the inspection. The RCRA inspection began at the T plant which is currently used by WMH as a staging and storage area for waste. We observed six interim status storage areas. They were:

- 4 tanks for storing liquid mixed waste;

- R-5 waste storage area containing approximately 160 drums of solid lead material contaminated with radioactive material, this waste is being decontaminated at the T-plant, 7000 lbs of lead have been cleaned to date;

- 214-T storage area containing approximately 100 drums of lab packs and liquids awaiting identification by analysis;

- 2706-T asphalt storage pad with approximately 150 drums being staged to be taken into the "greenhouse" area for decontamination;

- 211-T storage area containing a large metal box of waste;

- 271-T cage containing waste allegedly generated at the T-plant. According to labels on containers some wastes had been in this area over a year. The reason given by facility

representatives is that they are slow accumulating wastes and are held here until the drum is full.

In all of these areas we observed badly faded, unreadable labels. We also visited the facility bone yard and the Lewis Construction laydown yard. In the Lewis yard we observed a metal flammable materials storage cabinet containing containers of gasoline and miscellaneous aerosol cans. Empty aerosol cans are managed as hazardous waste. At this point we broke for lunch. During lunch Mr. Smith was interviewed by local news media.

Following lunch we resumed at the WSCF Laboratory. The laboratory is managed by Waste Management Hanford. Chemical and radiological testing for waste characterization and environmental samples is conducted at the lab. Waste is accumulated in small containers in each lab and each day a HW technician empties the containers into satellite containers in a central satellite container room. There are separate rooms for chemical waste and radioactive waste. In the chemical satellite room wastes to be labpacked are accumulated in a hood. Lab sink drains are blocked and liquid waste is collected as described here. The original design was for the sinks to drain to two holding tanks however lab operators told us the tanks have never been used. Rags that had contacted chemicals were being collected and managed as hazardous waste.

Waste Management Northwest, a subsidiary of Waste Management Hanford, operates an equipment cleaning unit at the lab site. Laboratory and sampling equipment are decontaminated in this unit and certified clean for reuse. Waste generated in this unit is collected in satellite containers.

When satellite containers in the lab complex become full they are moved to a less than 90 day accumulation pad operated within the complex. From here they are staged for shipment to the CWC.

I conducted a file review. I observed that waste is manifested from the lab to CWC. Shipping records appeared to be in order. I observed the training plan and training records. No problems were noted. Inspections were conducted weekly by the lab waste management staff. If problems are noted they are logged and tracked on a separate form.

From here we went to the main fire station on the facility operated by the Hanford Fire Department. Site-wide Contingency plans are kept on the fire trucks. The firemen rely on the Chemical Management System (a computerized tracking system) to provide instant information on chemical hazards that exist at any site. We later found that this data base is incomplete. It contains information on only unused products as received onsite and does not contain information on hazardous waste or any mixtures of products that were mixed onsite.

Our final stop for the day was the 607 building operated by Dyncorp. There were 50 to 100 drums on the site labeled as nonregulated waste. No other labeling was on the containers. Dyncorp representatives said that records as to contents and source of the containers are kept but not at the site. There was an overpack container that had absorbent pads in it. There was free liquid in the bottom of the container. It was explained that this was rain water that had leaked into the container.

Immediately north of this area was another laydown/staging area for the Lewis Construction Company. There were three satellite hazardous waste containers in this area. They were labeled and kept in plastic drum containers. The containers were for waste generated on

site as part of equipment cleanup each day. This concluded our activity for the day.

We reconvened at 8:00 am on May 13 and continued the inspection. We went to the 100N area and visited the 163-pad. This unit was operated by Bechtel, a USDOE contractor, as a less than 90 day accumulation area. The following materials were being collected for recycle: lead-acid batteries; alkali batteries; lead-acid gel batteries, non-PCB light ballasts; aerosol cans; lead metal. These materials are not labeled as hazardous waste and with the exception of the lead acid batteries and the lead metal they are sent to the 400 area recycling center for consolidation prior to offsite shipment for recycling and reclamation.

In the center of this less than 90 day pad there were two drums of CERCLA generated waste. One had a start date of 12-11-96 and the other had a start date of 8-14-97. The first container was filled on 12-11-96. Because the waste was a mixed waste of unknown activity and chemical makeup it required scheduling a trained and specially equipped sampling crew for safety reasons. For this reason sampling was not done until 8-14-97. Waste generated as part of this sampling effort was placed in the second container. When the analysis was completed it was determined by Bechtel that the radioactive analysis was inadequate. The material was resampled on 5-12-98. Results of this analysis is expected by the end of May at which time the two containers will be shipped off.

According to the operator of the less than 90 day pad several other waste streams generated in the 100-N area are accumulated in this area.. When wastes are generated anywhere in 100-N area the generator must obtain a container from the operator of the 163-pad and return the waste to the 163-pad the same day. Hazardous waste labels are dated but do not contain a waste description or waste code. Mixed waste is segregated from non-radioactive hazardous waste. Unusable empty waste containers are sent off as scrap. Any unknown waste awaiting analysis is kept in a metal storage locker. Weekly inspections are done and a log is kept. Any corrective measures needed are noted in the log and when they are completed that is also noted in the log.

We looked at records. Training records are put on a small card and each individual has their training record with them. Training appeared to be adequate. Shipping records were reviewed and no problems were noted.

Our next stop was the 1706KE building. A treatment system had been constructed here and a part-A permit application had been submitted. The unit never treated hazardous waste but did treat radioactive waste. The operator, Duke Engineering, a USDOE contractor, submitted a request for procedural closure of the unit. Ecology denied the request and a closure plan is under development. The labs operated at this site generate very small amounts of waste. The waste which is generated is accumulated and placed in the less than 90 day accumulation area onsite.

In this area, WMH operates a satellite accumulation shed for maintenance waste generated in the 100K area. They also operate a less than 90 day accumulation area. Waste names and/or waste codes were not placed on the labels in these areas. Inspection logs for these areas were reviewed and no problems were found.

We concluded our day at the 2101 M facility. This is the location of several maintenance shops. Material awaiting shipment to the recycle center is accumulated and not labeled as a hazardous waste. Materials collected here include aerosol cans, batteries, fluorescent tubes, sodium lamps, and mercury lamps. Towels are collected and laundered. Used oil is collected

and analyzed. Depending on the results the oil is sent offsite for recycle or burning. The less than 90 day accumulation area is a large metal container designed for this use. It has three bays. Two are managed by WMH and the other by Dyncorp. All containers in the unit were labeled and dated. However, the labels did not contain waste descriptions or waste codes.

On Thursday 5/14/98 we resumed the inspection at the Central Waste Complex (CWC). This is a large storage complex for mixed waste operated by WMH. The facility is operating under RCRA interim status and should be incorporated into the sitewide RCRA final permit this year. Waste is stored here awaiting development of offsite capacity. We reviewed shipping records, training records, and inspection logs. No problems were noted. We toured the facility and looked in several storage buildings through the doors. We did not enter the buildings because they are radiation zones and require special monitoring to enter. Containers in the buildings appeared to be neatly stacked and properly labeled.

Immediately north of the CWC is the Waste Repackaging and Processing (WRAP) facility. Construction was completed recently and the facility is in the process of gearing up. When the unit is operational, transuranic waste will be treated here to make it land disposable. Waste will stay at the facility for 30 to 60 days. Once treated, the waste will be returned to the CWC for storage until disposal capacity is available. Waste generated by the facility is accumulated in a permitted storage area. Waste for recycle is also accumulated here and is not labeled as a hazardous waste. An adjacent shop building 2620W has a laydown yard. There is a metal cabinet here for collection of used oil. No regulated waste is generated in the shops.

We next inspected the ETF/LERF/242-A Evaporator. Contaminated wastewater containing F listed solvents from various locations is evaporated in the evaporator to remove the water. The condensate from the boiler is sent to Liquid Effluent Retention Facility (LERF) which consists of three large surface impoundments. Two of the impoundments are designed to be RCRA compliant with liners and leachate collection. From the LERF the water goes to the Effluent Treatment Facility (ETF) for treatment. Treated water is discharged to the ground under an Ecology discharge permit. The facility has obtained a delisting for the F1-5 wastes that were originally in the waste water so the treated water can be disposed of without a RCRA permit.

In the ETF building there were approximately 140 unsealed drums of waste water sludge and 200 drums of dry material from the treatment process. Outside of the ETF building was a white metal portable storage shed with three bays. One was for less than 90 day accumulation, one was for nonregulated waste and one was for product storage. A mixed waste satellite accumulation area was in the back corner of a conex box. A metal cabinet contained one satellite accumulation drum for sampling wastes. There was also a cabinet outside of the 242-A evaporator building. It contained two satellite drums. One contained contaminated soil and the other contained rags.

Near the ETF was an area that had two laydown yards for well drilling operations. The easternmost yard belongs to Bechtel and is referred to as the 200 East Pipe Yards. Through the fence we observed 17 drums in a roped-off area plus numerous other drums in the east yard. We contacted someone to inquire about gaining access to the facility. We were told it would take two hours to get the appropriate person to the location. Given the late hour we opted to return in the morning to continue.

The west yard is managed by Waste Management Northwest (WMNW). Outside the

fence was a satellite accumulation area containing two drums. One was labeled F001 rinsate and the other was F001 debris. We concluded the days activities at this point and returned to town.

On 5/14/98 we returned to the 200 East Pipe Yards we had found at the end of the day Thursday. While we waited for someone to arrive to discuss the drums in the east yard with us we inspected the west yard. A satellite accumulation area was located inside the fenced area near the gate. In this area was one 55 gallon drum with a HW label and no other marking, two 30 gallon drums with no labels, a 30 gallon drum with a HW label, an overpack drum with no label and a 5 gallon container with "suspect PCB 2/17/98" on the container. In the center of the yard were seven 55 gallon drums and one 30 gallon drum. They contained diesel contaminated soil and water. Outside of the barrel storage shed was a 5 gallon bucket that had no lid on it and contained a viscous reddish brown liquid. The yard manager did not know where it came from or what the liquid was. An old label on the bucket read "ARGE-55. We requested that the material be sampled and analyzed and a proper waste designation be made

In the east yard, of the 200 East Pipe Yards, we observed 17 -55 gallon drums inside an area marked as <90 day storage area against the eastern boundary fence. The drums were marked as follows:

WELS9405745, HW label, start date 8/29/95
WELS9500394, HW label, date sealed 4/1/96
9510430 , no other label
9510369 , HW label, date 3/6/96
WELS9410064, HW label, start date 3/30/95, 30 gallons
WELS9410085, HW label, no date, 30 gallons
EFSG94-0113, HW label, start date 3/8/94
EFSG94-0114, HW label, start date 3/9/94
WELS9500402, HW label, beginning date 3/26/94
WELS9500062, HW label, beginning date 3/27/96
WELS9401398, HW label, beginning date 10/23/95
WELS9500034, HW label, beginning date 10/20/95
WELS9500043, HW label, start date 3/12/96
WELS9500033, HW label, start date 3/12/96
WELS9500017, HW label, start date 9/01/95
WELS9500030, HW label, start date 9/01/95
WELS9500046, HW label, start date 2/06/96

A Bechtel representative said the waste in the drums was well drilling and well maintenance waste. The drums were sitting outdoors on a gravel pad with no secondary containment.

At our request the facility provided documentation of the waste designation for these containers. All of them were designated as "F" listed solvents only. However, the documentation indicated that three of them contained waste waters that had levels of carbon tetrachloride above the toxicity characteristic threshold of 0.5 mg/kg (ppm) and should have been designated as D019. The three in question were: WELS9500043 (3.789 ppm carbon tetrachloride), WELS9500033 (3.789 ppm carbon tetrachloride), and WELS9410064 (1.3 ppm

carbon tetrachloride)

In the radioactive waste area against the south fence there were 3 drums with "unknown" on the label for material description. Beginning dates on the drums were 1/6/98, 3/23/96, and 5/15/98. These drums had no hazardous waste labels or drum numbers visible. Against the south fence were several other drums that were labeled as waste awaiting analysis or nonregulated waste. We asked for documentation on these drums. We finally obtained this documentation in late July and it indicated that the materials did not designate as regulated waste.

We returned to town and prepared for an out-briefing for the week. The out-briefing ended at 3:00 pm and we concluded our activities for the week.

On 5/18/98 we resumed the inspection. We met with Scott Meyers and representatives from (WMNWX) and Bechtel to discuss the drums in the two 200 East Pipe Yards. They told us that the drums were removed from the 200 west area 2 or 3 years ago. They were listed waste derived from a groundwater contamination plume of F001 listed solvent. They were moved to the less than 90 day accumulation area because at the time they were moved the contractor in control of the waste did not have a permitted storage unit. The wastes were repackaged and hazardous waste labels were applied in the last two months. They further informed us that final designation was determined two weeks prior to our visit and the site manager hadn't had time to put the waste code on the labels.

We asked about the five gallon pail of brown liquid in the west yard. We were shown photographs showing that the pail contained greasy rags and a roll of duct tape in rain water. We were told that the pail was sealed and will be sampled to make a proper waste designation. We later received analytical results indicating that the material did not designate as a regulated hazardous waste.

We were told that the drums will be moved in 30 days or less. WMNWX will provide designation documentation for all of the waste drums in the two yards and the 5 gallon pail. They will also provide copies of the photos of the 5 gallon pail. This was done and we later received the documentation of the drum shipment.

We broke for lunch and resumed the inspection at the 400 area recycling and consolidation center. In the center were two satellite areas, a less than 90 day area, and an area for universal waste. One satellite was for aerosol cans and the other was for mercury containing wastes. The less than 90 day area was for wastes being held for recycling. At the time of the inspection there was one drum in this area. It contained waste sodium light bulbs. In the universal waste area were drums for various types of batteries. The center also collects fluorescent light tubes. Generators are responsible for transporting waste to the center.

From here we went to the 440 building <90 day accumulation pad. There were less than 10 drums of waste here. We asked the unit manager about weekly inspections, training, and shipping records. No problems were found.

We concluded our day meeting with Hanford Fire Chief Good and Becky Austin who is heading an effort to improve emergency planning and response. The idea is to incorporate information in several chemical and waste tracking data bases into a site wide information system. The Chief of the Hanford fire department has been designated as the incident commander for any chemical release or other emergency situation that occurs. The fire department has hired an industrial hygienist. The fire department has four stations on the

reservation that are manned by a minimum of 18 firefighters at all times. RCRA contingency plans will be incorporated into the site wide response and safety plan. At this point we broke for the day.

On Tuesday May 19, 1998 we resumed the inspection by meeting at the EPA Richland offices with Mr. Glen Triner and others from Waste Management Hanford to discuss the waste management organization at Hanford. Mr. Triner is from the generator services part of Waste Management Hanford. He explained that the generator provides waste designation information to WMH and makes a waste designation. WMH then looks at the information and verifies the designation. Once designation is verified arrangements are made for shipment of the waste. If the waste is going to an onsite TSD, the TSD will make a waste verification when the waste is received. The sampling level for this verification is based on the performance evaluation system. For a good performing generator 5-10% of the waste containers will undergo physical inspection. Of those containers physically inspected 10% will undergo chemical testing. A generator with a poor performance record can have as much as 100% of its waste designation subject to verification.

WMH uses the Solid Waste Evaluation Aid (SWEA) waste designation data base to designate waste and the Solid Waste Information Tracking System (SWITS) to track waste onsite. Instead of having the generator put a waste identification and waste code on the hazardous waste label WMH relies on the SWITS system to identify the contents of a drum.

All generators except PNNL, Bechtel and those at the fast flux treatment facility rely on WMH to provide waste management services to them. In order to provide these services, they operate several less than 90 day accumulation areas and permitted storage areas onsite. All manifests are kept in a central location and generators do not usually have copies of manifests at their site. Offsite shipments are staged at the 1163 area. Wastes are transferred directly from a trailer used to move it to the staging area to a trailer of the offsite transporter.

WMNW does transportation inspections, prepares transportation paperwork, and signs the manifest. They are the sitewide technical authority for shipping and transport of HW.

WMH has submitted a proposal to Ecology to close the 2401W storage unit in the CWC and convert it to a centralized less than 90 day accumulation area. Waste coming to the less than 90 day area would undergo minimal waste designation verification prior to shipment to the less than 90 day area. The 616 permitted storage unit has been vacant since 1995. WMH would like to close the unit. They are also considering transferring the facility to another contractor for use as a storage unit or less than 90 accumulation area. They are aware that this unit has not met the regulatory requirement to close within 180 days of the last receipt of waste.

I asked Mr. Triner about the time required for the shipment of waste to an onsite storage unit. He said that if the waste was easily designated it could be moved in one to five days. If the waste designation was complicated it could take 30 days or more.

WMH has a waste minimization program in place. Pollution prevention opportunity assessments are conducted for generators on request. We conclude our meeting with WMH and broke for lunch.

Following lunch we resumed at the 1171 vehicle maintenance facility operated by DynCorp. The facility contains two satellite areas for petroleum product wastes, one satellite area for waste paint solids, and one satellite area for waste paint liquids. They have two LANDA

detergent and hot water degreasers and four solvent degreasers with filters. Paint booth filters in the body shop are managed as hazardous waste. Chloro-Fluoro-Carbon (CFC) equipment is registered and all mechanics have certification training. Waste shipping records are not kept at the site and the site personnel didn't know where they were kept.

In the 1100 area surplus yard was one stainless steel tank and one stainless steel 55 gallon drum in an area roped off and marked as a radiation zone. It was explained by Linda Brown that the tank was empty but that the back third of it was radioactive. It will be moved to ATF for decontamination. She said that sampling showed that it was not HW.

We inspected the 1100 area less than 90 day accumulation area. It is in a white metal container unit with secondary containment built in. There were four 55 gallon drums, one 30 gallon drum and one 20 gallon drum. Three of the drums were ready for shipment with the waste identified on the drum and a waste code marked on the labels. The other three drums had hazardous waste labels but did not identify the contents or contain waste codes. Training was adequate, inspections were conducted and the logs were in order. Manifests were kept in the office at another location.

Our final stop for the day was the 324 building. The building is shared by Babcock&Wilcox (B&W) and PNNL. We inspected the B&W sites. A mixed waste less than 90 day area and a hazardous waste less than 90 day area were operated in adjacent white metal rectangular containers. The mixed waste area contained one drum of acetone rags and three drums of lab packs. The hazardous waste area contained no hazardous waste but had non regulated waste in it. Outside, at the northeast corner of the building was a satellite accumulation area. There were satellites for circuit boards and other lead waste and one for hazardous waste used oils. Both of these waste streams were generated inside the building. There were also drums for accumulation of batteries, incandescent lights, rags and aerosols for recycling. In the aerosol drum was a crushed aerosol can and a strong organic odor. There was a drum for nonleaking PCB ballasts. I conducted a file review and looked at inspection logs, training plans, and shipping records. No problems were noted however the manifests for offsite shipments were not kept at the site but at a central location. This ended the inspection for the day.

On 5/20/98 we began in the 300 area to investigate PNNL. We met with representatives of PNNL in the 337 building. Mark Riese explained how PNNL was organized to manage waste. He told us that a tank has been installed in the basement of 325 and when the tank becomes operational liquid mixed waste will be collected there and transported directly to tank farms. The 340 tanks will be closed.

Excess materials are put into a redistribution program to try to find a user for them. Recycling for batteries and other recyclables are done on contracts for various materials. Mr. Riese said that PNNL found the WMH recycling center to be unacceptable.

Waste tracking data is maintained in a PNNL CMS database and is uploaded periodically to the facility wide SWTTS system for the purpose of allowing WMH to prepare the annual report.

Contingency plans for the TSDs are incorporated into site emergency plans. Contingency plans for the less than 90 day areas are in the process of being incorporated into the site wide plan. Building emergency plans that we observed have a section addressing hazardous waste.

We were told by the PNNL representatives that several problems have occurred in

PNNL's waste management practices. Batteries and light tubes were found by WMH in drums that went to the low level burial grounds. They were sent back to PNNL for repackaging. Two steel drums containing phosphoric acid ruptured in the 305B storage unit. They had been repacked that day and improper drums were used. A satellite waste container in the basement of 324 was found by waste designation personnel to contain many waste streams instead of the single stream it was intended to hold. A container of low level waste failed waste verification at 305B because there were two cubatainers of hazardous waste found in it. A small container of high vapor pressure waste in a lab satellite area ruptured.

We toured the labs in the 331 building. We observed the emergency plan and found that the building emergency director was not on the list of emergency directors. Several satellite areas were observed. Many of them had containers of different wastes in the same area and was considered to be the same satellite. We explained that each waste should be counted as a separate satellite. We concluded with a file review of shipping records. A separate file is maintained for each shipment of both hazardous waste and mixed waste. This ended our onsite inspection activities for the day.

We resumed on 5/21/98 at the 325 building. We looked at the permitted treatment units in the building. Neutralization, precipitation, and other simple treatment is done in batches up to 55 gallons in rooms 520 and 528. Once treated, this waste is either placed in drums and sent to the CWC or is piped to the 340 facility for transfer to the tank farms. Room 527A houses a monitor for a remote camera used to inspect a tank in the basement which is used by the shielded analytical lab for storage of radioactive mixed wastes. The monitoring system consists of a remote controlled video camera with a light and a mirror to see the back side of the tank. At the time of the inspection an overhead light in the room was not working and we were told that it had been out for at least two weeks. This made the room dark and it was difficult to see the tank clearly. Additionally, the mirror was out of alignment making it impossible to see behind the tank to detect a leak there. The tank is double walled and equipped with a leak detection system between the walls. No one we talked to could tell us what kind of leak detection was between the walls. There was also a leak detection system in the secondary containment for the tank. When a leak is detected by any of the detectors, it sounds an alarm at the control panel and on a beeper carried by the operator. We had an operator of the system demonstrate how it worked. She said that she could not see behind the tank. She showed us in a log that she had reported the burned out light two weeks prior to our visit but it hadn't been fixed yet. A second light went out while we were observing her demonstration.

In the SAL 201 room cell 1 & 6 are permitted storage and treatment units. Mr. Riese said that mixed waste could stay in these units up to five years.

A less than 90 day accumulation area is operated in room 529. Individual labs accumulate waste in satellite containers. Labs in rooms 420 and 525 were inspected. The satellites were observed and no problems were noted.

Waste records for the building are not kept in the building and therefore are not readily available for the fire department in an emergency.

We visited the 340 tank facility. This unit consists of less than 90 day storage in tanks. There are two 15,000 gallon tanks for storage below ground and two 8000 gallon above ground tanks for overflow. There are also three concrete basins for collection of possible contaminated

waste waters. Wastes are hard piped to the unit from other buildings in the 300 area. If the wastes are not contaminated enough to go to the tanks a detector closes a valve and redirects the material to the basins where it is sampled to determine its fate. Containerized waste can be added to the tanks through a sump in the 340 decon building. Batteries are collected for recycling in this building. A rail tank car is stored in a building at the unit and is used to ship waste to the tank farms.

After lunch we spent the afternoon looking at PNNL's waste tracking and waste designation system for mixed waste at the 305B building. Several files were reviewed and copies of files were made to take back to the office for further review. We stopped for the day at 4:30 pm.

On 5/22 we resumed at the 325 building to discuss waste designation and tracking. We asked to look at the real time radiography (RTR) unit and to speak to the operators. Bags of low level waste are passed through the unit and x-rayed to make sure that the contents are compactible and not liquid. If regulated hazardous wastes are found, they are pulled out and managed separately. We asked the two operators about their training. One person had gone through formal training to learn to read the X-Rays images; the other had formal training only on how to operate the equipment.

We asked about waste designation for mixed waste. We were told that a CDRR is sent to the office in 305B. Waste designation is done from the information presented in the CDRR. The paper work is sent to the 325 building for verification. Prior to shipment the designation is verified in the field, however, most of the time the review is limited to the paperwork without a visual inspection of the drum contents. After treatment at the 325 building, liquids go to the LRWS and grouted material goes to the low level burial grounds. We reviewed designation and shipping records and asked for copies of some files for further review. The copies were provided.

Our next stop was the 306W building. We visited the less than 90 day accumulation area in room 130. There were both Hazardous waste and mixed waste in the area. Container number UK-331-137 was labeled to contain a stain but was marked "non-hazardous waste" and container number UK-331-126 was labeled to contain gelcoat but was also marked "non-hazardous waste". We asked for more information on these two wastes. Material safety data sheets for these two materials indicated that they may designate as hazardous waste. The PNNL redistribution center was in this building. It consisted of several small containers of materials considered by PNNL to be usable. They were in metal cabinets. There was a satellite container for HW rags outside the building in a locked cage. Only one person had a key to get into the drum. Recyclable batteries were being collected in drums inside the cage. They were behind some other drums and not easily accessible.

At this point we broke for lunch and prepared for the weekly out briefing. The briefing ended at 3:00 pm and we concluded our inspection activities for the week.

The inspection was resumed at 1:00 pm on 6/1/98. We visited the 305B building to conduct further file reviews. We asked about the processing of labpacked wastes. Waste to be labpacked comes to the 305B building and is designated and verified as individual containers prior to labpacking. Any material that has a high radiation dose will receive only a visual inspection. The container will not be opened and no chemical verification would be done.

Labpacking is done in the 305B. building Occasionally waste will come already packed. These will be opened and the contents will be verified. If any material is found that should not be in the drum, it would be removed and started through the waste characterization process. No records are kept of waste removed from a drum in this situation. The waste is tracked on a separate file of its own.

On 6/2/98 we returned to the 306W building to look at the redistribution center and discuss waste designation. If a lab has excess chemicals they can send a CDRR to the redistribution center. If the material is accepted by the center it will be shipped to them and they will tag it with a bar code and place it into a metal cabinet for storage. A list of available chemicals is issued from the Chemical Management System (CMS) database and made available to the labs. When a lab is in need of a chemical, they can check the center's inventory and if the chemical is on hand they can take it and use it. During our discussion on the redistribution center operation we discovered that the CMS only tracks chemicals in the original container. If chemicals are transferred to a new container they will not show up in the CMS. The redistribution center collects materials for recycling. Circuit boards, batteries and fluorescent light tubes are collected. No waste generation records are kept on any of these materials so it is not possible to tell how long materials have been in storage. The Environmental Field Service Operators Manual does not contain information on recycling. The Standards Base Management System (SBMS) section entitled "Working with Chemicals" establishes procedures for proper handling of chemicals. The SBMS also has information on recycling in it.

We conducted a tour of the 306W facility. In a cage outside on the south wall is a satellite accumulation drum for "moly rags", some drums of cerium nitrate, nitric acid and ferric nitrate, and some drums of batteries for recycling. There is a storm drain about five feet from the cage. We were told that it drains to the process sewer which ends up in a treatment unit operated by WMH. We entered into a discussion of the designation of the "moly rags". They come from the process of compaction of uranium rods. The rods are first sprayed with a lubricant which according to the MSDS is 40% methylene chloride. Once the compaction is completed the lubricant is removed with the aid of a solvent containing xylene. The material is then wiped down with rags to remove the solvent and lubricant. When the rags were submitted for waste designation only the xylene solvent was mentioned on the CDRR. No mention was made of the methylene chloride. This resulted in the waste being mis-designated for xylene only.

In the afternoon we went to the MO279 building, the WMH general services offices, to discuss their process for waste designation and verification. This discussion carried over to the following morning (6/3/98). WMH is trying to place more responsibility on generators to designate their waste. The generator submits a narrative description of the process. This is reviewed by the technical service staff and if needed they will ask for more information to assure that the process is clearly understood. If needed, chemical analysis of the waste stream will be conducted. Once all the information is collected a waste profile is developed. When a shipment of waste comes in it will be verified against the profile using fingerprint testing. If discrepancies are found samples will be taken for analysis.

We asked why PNNL was at the 100% level for waste verification for waste coming to WMH facilities. We were told it was because of routine and systematic failures of verification of waste designation on incoming shipments. We asked if WMH got any waste mixed with waste

from PNNL private contract work. They said they did not. We asked where the PNNL private contract waste was going and they said they did not know.

We closed out the day with a visit to WSCF labs. We talked to a chemist about a "ultima gold" scintillation cocktail waste stream. He said that if he is preparing a scintillation cocktail that contains a hazardous waste, he would segregate it from the general scintillation waste stream and manage it as a hazardous waste. The WSCF facility has two people who work full time on waste management. They work with the chemists in the labs to develop a "process fact sheet" for each waste stream. This information is then used to designate the waste.

At this point we concluded our inspection for the week.

On Tuesday June 9, we resumed the inspection at the PFP facility which is operated by Babcock & Wilcox. We discussed two specific waste shipments with them to determine whether or not they had been properly designated. No problems were found. B&W generators work with WMH to develop profiles for all waste streams. Based on directions from WMH, B&W management gives written instructions to chemical process operators (solid waste operators) for labeling and packaging of waste. Following proper waste management practices is a mandatory condition of employment for B&W.

Following lunch the group split into two groups. One group went to WSCF and the other group went to the 204R building. At WSCF we looked further into the designation of the "Ultima Gold instagel" waste (item B on manifest number 29733 dated 10/22/97) that we had asked about the previous week. The lab pack contents list and the chemist information sheet both showed that the container held a composite of 14 scintillation cocktails, two of which were "Ultima Gold instagel&toluene". The waste designator had interpreted this to mean that the toluene was a component of the instagel and was not used for its solvent properties and was also less than 10% of the mixture and therefore the F005 listing did not apply. The chemist, Ken Iwatabe, stated that he had added the toluene to bring the sample into solution. The toluene then was used for its solvent properties and was taken from a stock of pure toluene and therefore should have been designated as F005 when the cocktail became a waste.

The group that went to the 204R building inquired about the emergency response plan. There were two plans available. One plan was dated 1994 and the other was dated 1996. Although they were still being used, both plans had a cover-page stating that the plan was outdated. The emergency phone numbers in the plans were tried by the inspectors and found to be invalid numbers.

We concluded the day with a visit to the 337 building to pick up some documents we had requested and further discuss PNNL's waste management practices. We spoke to Harold Tilden. We asked about unknown wastes and were told that unknown wastes pending analysis are kept in either a less than ninety day accumulation area or in a permitted storage unit. After a waste is identified, it is processed through a CDRR for designation. We asked about how private contract waste was managed. We were told that it may be mixed with DOE contract waste but tracked separately. He said that once the waste is shipped, the waste management costs will be calculated and charged back to the client to reimburse the DOE contract. We ended for the day.

We began on the next day with a meeting at the 306W building to discuss PNNL's system for managing unknown wastes. Mr. Cameron Anderson representing PNNL told us that most unknown waste is referred to as legacy waste. He explained that legacy waste occurs when a

contract is over and the researcher moves on to another project, when money runs out on a project and the researcher moves on, or when another contractor takes over the project. In each of these cases the researcher physically moves without taking care of excess or waste chemicals before he/she leaves. The new occupant of the lab then inherits waste for which they have little or no process knowledge. Most of this waste is designated based on fingerprint analysis or MSDS information if one can be found. Occasionally, chemical analysis will be done if the designator is not comfortable with the designation. Once the "unknown waste" person has made a decision as to what the waste is, the waste will be processed for final designation and shipping. During this process, the waste designation people may change the designation made by the "unknown waste" manager. There was no clear reason for unknown waste being managed by a different system than the known wastes. We asked about a small container that we had seen in the less than 90 accumulation area in room 130 of the 306W building. The label on the container identified it as "gelcoat". There was also a "non-hazardous waste" label on the container. We were told that the material had been discovered on 3/5/97 and was sampled on 3/6/97. The Haz Cat analysis was not done on the sample until 8/22/97. No CDRR had been submitted and the material was still sitting in the less than 90 day accumulation area when we visited it on 5/22/98.

We also discussed management of private contract wastes with PNNL division managers. Mr. Cameron Anderson stated that PNNL must keep the private and DOE waste separate for funding purposes. He further stated that private waste may be managed with DOE waste but that the cost would be tracked and backbilled to the customer. No evidence that this actually happened was ever presented. We referred this issue to the DOE Inspector General for follow-up.

We concluded the week's field activities at the 325 building. We discussed two waste streams from the labs. One was a high pressure liquid chromatography (HPLC) mobile phase and the other was waste from sample extraction. For the HPLC mobile phase waste it was not clear from the documentation if the sample being analyzed was included in the waste determination. For the extraction fluid containing Methylene Chloride three containers were discussed. Two of them (306-11-15B and 306-11-15G) carried an F002 waste designation on the records and the third one (306-11-15C) did not. We were told that there was no difference between the wastes and that the failure to assign the F002 code to the one container was probably due to a clerical error in filling out the paperwork.

The week's inspection activities were concluded with an out-brief at 3:00 pm for the DOE management team at the DOE Richland offices.

In response to requests made by the inspection team for documentation of waste designation we received copies of waste designation paperwork consisting of Chemical Disposal & Recycling Request (CDRR) forms and supporting information. Upon review of a CDRR dated 3/8/96 for container "001/96-309-BROWN#1 room 309" EPA found that a solution described as 2% nitric acid and 98% water was thought to have a pH of approximately 2. Based on this claim the facility did not identify the solution as a regulated hazardous waste and did not assign the waste code D002 to the waste. According to pH calculations made by EPA and supported by tables on page 8-6 of the 1991 71st edition of the CRC Handbook of Chemistry and Physics and tables on page 4.3 of the McGraw-Hill Handbook of Essential Engineering Information and Data published in 1991, EPA determined that the pH of a 2% solution of nitric acid would be expected

to be between 0.5 and 0.8. This is well within the regulated universe of pH less than or equal to 2. This requires that the waste be designated as a D002 corrosive waste and managed as a hazardous waste.

On July 28, 1998 we returned to continue the inspection. We visited the Battelle Life Sciences Laboratory in North Richland. Waste designation is conducted by the PNNL group at the 305B building on the Hanford reservation. Waste is accumulated in satellite accumulation areas in each Lab. A CDRR is prepared for a waste when it is ready to ship. After the designation is made, wastes are shipped offsite from the Battelle < 90 day area in North Richland. Small amounts of mixed waste are sent to the 305B building and eventually to the Central Waste Complex on Hanford. Most of the work conducted in this lab is animal research. One of the main waste streams is formalin which is recycled on site. There is a small amount of chemistry performed generating solvents and acids. Only private contract work is performed at this lab.

One of the main waste streams generated at this lab is a paraffin/xylene waste. It is generated in the process of preparing microscope slides of animal parts. Although it is considered nonregulated, it is managed as a regulated waste at the clients request. We asked how the xylene was used in the process. We were told that the xylene was used to dissolve fat in the specimen. Based on this information the waste would be designated as F003. I later received a written explanation stating that the xylene is not added to dissolve fat. It explained that alcohol is added to desiccate (remove water) the sample and then xylene is added to replace the alcohol from the specimen. However, as a result of this process the xylene will also dissolve fat that is present.

All chemicals received at the lab are logged into the chemical management system. In case of an emergency 374-2400 is called. This is a central point of contact for all Battelle sites in the region. The operator at this number is responsible for notifying the emergency response agencies. This could result in a delay in notifying the proper response agency.

We moved to the 331 building on Hanford. We talked to representatives from the environmental health services division and the environmental technical division. All waste generated in these labs is collected in satellite accumulation areas. Waste designation is done out of the 305B building.

We concluded the day following up on waste designation at 305B.

On 7/29 we began at the 327 building. A spill response drill was in progress when we arrived. The drill was a mock acetone spill. The responders were making no effort to keep the spill from entering a storm drain less than ten feet away. The crew running the drill explained that the building was temporarily closed to access because of a spill. We were asked to wait approximately 10 minutes before entering. Once inside the building we began with an in-briefing. The mission of the crew in the building is to cleanup TRU waste. There is a satellite accumulation area and a less than 90 day area in the hot cell.

We went into the hot cell. The satellite accumulation area had 3 containers in it. A solvent rag waste stream found in the satellite was no longer being generated. We told them that this container should be removed from the satellite area to avoid being considered storage. In the less than 90 day area there were two containers. They appeared to be properly labeled. Floor drains in this area all drain to the Radioactive liquid waste sewer (RLWS). There had been no

release to the RLWS in the last four years. We noted that a leak detector was activated in a sump draining to the RLWS. It was explained that an outdoor eyewash had frozen and leaked water into the building. Water had gone down the floor drains and flooded the sump to the point that it drained through the detector mechanism into the space between the tank shells thus triggering the alarm. We pointed out that this rendered the leak detector useless and they should expedite repairing the system.

Following lunch we went to the 204R building. On an earlier visit we had noted problems with emergency response organization. New plans were in place and training had been conducted. Malfunctioning alarms were to be decommissioned because the process they monitor is no longer in use. We proposed a scenario to test their emergency response. We proposed that a tank car of waste coming to the tank farms was observed to be leaking. We were told that 204R is responsible to deal with such releases. The emergency phone line to the shift manager was busy on the first attempt but worked on the second attempt. The proposed response appeared to be satisfactory. Drills are run annually for tank car releases.

We concluded the day at the 200 East Pipe Yards. The 17 drums of hazardous waste that had been in the east yard were removed. Approximately 14-16 drums that were labeled as non-regulated remained in the east yard. They appeared to be similar to the drums that were marked as hazardous waste. We asked for documentation confirming the status of these drums. This documentation was provided on 7/30.

On 7/30 we began with a meeting with the Richland Fire Chief to discuss agreements they have with DOE for emergency response. A written agreement is in place and was recently updated. It is a mutual aid plan. The agreement has the local fire departments responding mostly to wild land issues such as grass fires. Although they can respond to fires and radioactive emergencies on Hanford, they are rarely called to do so. Richland provides a backup to the Hanford Fire Department should the Hanford Fire Department receive a call when their crews are already responding to an earlier call. If Richland had to respond to a structure fire on Hanford they would rely on people at the site for information on hazards. Richland is responsible for responding to the Battelle labs in North Richland. These labs do not call 911 for an emergency; they call the PNNL emergency contact on Hanford who is then responsible for contacting Richland. This results in a delay in notification and a slower response from Richland.

We concluded our field work with a return visit to the WSCF laboratory in the 200 area. We asked about the disposition of expired standards. We were told that some standards can be sent back to the standards certification lab at 222S and be recertified. Some expired standards had been sent to Washington State University for use in teaching. I asked about archived samples. The lab managers told us that samples are not usually archived unless the customer requests it. Samples are usually held for 30 days after the final analytical report is received by the originator. If they are hazardous material they are then sent back to the originator for proper waste designation and disposal. We asked if there was anything in the archive building that had been there more than a year. We were told that there were five bags each containing 300-500 grams of soil contaminated with PCBs that had been there for 2 years. We asked to see the samples and moved to the archive building where they were supposed to be. The archive building was full of coolers with a total of 22,000 samples in them that had just been delivered as part of an effort to return Hanford generated samples to Hanford from labs around the country. It

made it difficult to access some of the shelves. We asserted that we wanted to see the PCB soil samples to verify proper tracking. Coolers were moved and a search was conducted, however, no such samples were found. We requested that they continue looking and we returned to the lab to continue our discussions. In two hours they were unable to find the samples.

We asked about the ultima gold with toluene waste that we had investigated earlier. We were told that the designation as nonregulated was made based on EPA designation guidance that was available at the time the designation was made. Toluene was used to disperse the sample in the cocktail to assure an even distribution of activity throughout the cocktail.

The emergency response plan for the lab was reviewed and it was determined that the new site-wide plan had not been implemented in the lab on July 15 as was required by Ecology.

At this point we ended our tour and returned to Richland to prepare for an outbriefing. The outbriefing was conducted in the DOE Richland offices for DOE managers and contractors. We left the site at 4:30 pm.

Conclusions

Many potential violations were observed. The most notable were the illegal storage unit in the 200 area pipe laydown yard, failure to RCRA close an inactive storage unit(616), several instances of improper waste designation, and lack of training and coordination in the site-wide emergency response planning.

ACRONYMS

AAWP	Asbestos Abatement Work Plan
ACM	Asbestos-Containing Material
ALARA	As Low As Reasonably Achievable
ALE	Arid Lands Ecology
BCAA	Benton Clean Air Authority (BCAA)
BEP	Building Emergency Plans
BHI	Bechtel Hanford, Inc.
CCRC	Centralized Consolidation/Recycling Center
CDRR	Chemical Disposal/Recycle Request
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMS	Chemical Management System
CP	Contingency Plan
CRC	Chemical Redistribution Center
CWC	Central Waste Complex
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
ECR	Environmental Compliance Representative
EMS	Environmental Management Services
EMSD	Environmental Management Services Division
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
ES&H	Environment, Safety, and Health
FDH	Fluor Daniel Hanford, Inc.
FSR	Field Service Representative
FUA	Facility Use Agreement
FY	Fiscal Year
HFD	Hanford Fire Department
HMID	Hazardous Materials Information Database
HQ	Headquarters
IH	Industrial Hygienist
ISMS	Integrated Environment, Safety, and Health Management System
ISMDS	Integrated Environment, Safety, and Health Management System Description
Joint Task Force	Waste Management Joint Task Force
LOI	Line of Inquiry
LLW	Low-Level Waste